

Syllabus for the trade

of

BUILDING MAINTENANCE

(SEMESTER PATTERN)

UNDER

CRAFTSMEN TRAINING SCHEME

Designed in: 2013

By

Government of India

Central Staff Training and Research Institute

Directorate General of Employment & Training

Ministry of Labour & Employment

EN -81, Sector-V, Salt Lake City,

Kolkata-700091

List of Members of trade committee meeting for the trade of **BUILDING MAINTENANCE**
held on 18-10-2011,at Advanced Training Institute Kolkata.

Sl.No	Name & Designation S/Shri/Smt	Organisation	Remarks
1.	N.K.Chatterjee,Director	A.T.I.Kolkata	Chairman
2.	J.Ukil. Jt.Director	A.T.I.Kolkata	Member
3.	S.P.Bhatterjee,DDT	A.T.I.Kolkata	Member
4.	G.C.Saha,ADT	A.T.I.Kolkata	Member
5.	Prasanta Kumar Paul,JE	CPWD,Kolkata	Member
6.	Saikat Dutta	Project Manager, M/s Unit Construction Co.(P) Ltd. Kolkata	Member
7.	A.K.Kolay,Asst.Engg.	CPWD,Kolkata	Member
8.	A.K.Dutta,ADT	A.T.I.Kolkata	Member
9.	A.K.Mondal,ADT	A.T.I.Kolkata	Member
10.	Sk.A.Hossain,T.O	A.T.I.Kolkata	Member
11.	Soma Das,V.I	RVTI,Kolkata	Member
12.	Manika Banerjee,V.I	Don Bosco,SERI	Member
13.	Subrata Saha	Representarive of Govt. of W.B	Member
14.	Ajoy Kumar Hazra Choudhury	Representarive of Govt. of W.B	Member
15.	Abhijit Kumar Porel	Representarive of Govt. of W.B	Member
16.	Pradip Kumar Sarkar	Representarive of Govt. of W.B	Member
17.	Somnath Adhikari	Consulting Engineer	Member
18.	P.K.Madavi,	CTI,Chennai	Member
19.	A.K.Neogy	CSTARI,Kolkata	Member
20.	Dilip Ghosh,	ATI ,Kolkata	Member
21.	T.K.Halder	ATI,Kolkata	Member
22.	D.K.Saha	ATI ,Kolkata	Member
23.	Prabhat Kumar Roy	Representarive of Govt. of W.B	Member
24.	S.Rana,V.I	ATI,Kolkata	Member

List of members attended the Workshop to finalize the syllabi of existing CTS into Semester Pattern held from 6th to 10th May'2013 at CSTARI, Kolkata.

Sl. No.	Name & Designation	Organisation	Remarks
1.	R.N. Bandyopadhyaya, Director	CSTARI, Kolkata-91	Chairman
2.	K. L. Kuli, Joint Director of Training	CSTARI, Kolkata-91	Member
3.	K. Srinivasa Rao, Joint Director of Training	CSTARI, Kolkata-91	Member
4.	L.K. Mukherjee, Deputy Director of Training	CSTARI, Kolkata-91	Member
5.	Ashoke Rarhi, Deputy Director of Training	ATI-EPI, Dehradun	Member
6.	N. Nath, Assistant Director of Training	CSTARI, Kolkata-91	Member
7.	S. Srinivasu, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
8.	Sharanappa, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
9.	Ramakrishne Gowda, Assistant Director of Training	FTI, Bangalore	Member
10.	Goutam Das Modak, Assistant Director of Trg./Principal	RVTI, Kolkata-91	Member
11.	Venketesh. Ch. , Principal	Govt. ITI, Dollygunj, Andaman & Nicobar Island	Member
12.	A.K. Ghate, Training Officer	ATI, Mumbai	Member
13.	V.B. Zumbre, Training Officer	ATI, Mumbai	Member
14.	P.M. Radhakrishna pillai, Training Officer	CTI, Chennai-32	Member
15.	A.Jayaraman, Training officer	CTI Chennai-32,	Member
16.	S. Bandyopadhyay, Training Officer	ATI, Kanpur	Member
17.	Suriya Kumari .K , Training Officer	RVTI, Kolkata-91	Member
18.	R.K. Bhattacharyya, Training Officer	RVTI, Trivandrum	Member
19.	Vijay Kumar, Training Officer	ATI, Ludhiana	Member
20.	Anil Kumar, Training Officer	ATI, Ludhiana	Member
21.	Sunil M.K. Training Officer	ATI, Kolkata	Member
22.	Devender, Training Officer	ATI, Kolkata	Member
23.	R. N. Manna, Training Officer	CSTARI, Kolkata-91	Member
24.	Mrs. S. Das, Training Officer	CSTARI, Kolkata-91	Member
25.	Jyoti Balwani, Training Officer	RVTI, Kolkata-91	Member
26.	Pragna H. Ravat, Training Officer	RVTI, Kolkata-91	Member
27.	Sarbojit Neogi, Vocational Instructor	RVTI, Kolkata-91	Member
28.	Nilotpai Saha, Vocational Instructor	I.T.I., Berhampore, Murshidabad, (W.B.)	Member
29.	Vijay Kumar, Data Entry Operator	RVTI, Kolkata-91	Member

GENERAL INFORMATION

1. Name of the Trade : **BUILDING MAINTENANCE
(SEMESTER SYSTEM)**
2. NCO Code No. :
3. Duration : 6 months (One Semesters)
4. Power Norms : 2.5 Kw
5. Space Norms : 4 Sq Meter / Trainee
6. Entry qualification : Passed 10th class examination under 10+2 system of education with Science and Mathematics or its equivalent.
7. Unit Size (no. of trainees) : 16
8. Instructor's/ Trainer's Qualification : a) Degree in Civil Engineering from recognized engg. College/university with one year experience in the relevant field.
: b) Preference will be given to a candidate With Craft Instructor Certificate

Note : At Least One Instructor must have Degree/Diploma in Civil or Architecture

**Syllabus for the Trade of
“BUILDING MAINTENANCE” under C.T.S.
(Semester Code No. BUM-01)**

FIRST SEMESTER

WEEK NO.	PRACTICAL	TRADE THEORY	Engg. Drawing	Workshop Cal. & Science.
1	<p><u>Introduction to Training</u> To make the trainees familiar with workshop discipline layout of the shop tools and equipments safety precautions.</p>	<p>Introduction to trade, scope of training, its importance and safety precaution.</p>	<p>Properties of lines, angles, triangles circles, Drawing as language of communication. Different types of lines and symbols used in building drawings.</p>	<p>Volume and surface-areas of simple geometrical solids as cubes and prisms.</p>
2	<p><u>Mortar & Concrete</u> To prepare mortar and concrete of given mix.</p>	<p>Different types of bricks, cements ,lime, aggregate and tiles. Concept of water cement ratio workability and curing. Tools & plants required for preparation, transporting and placing of mortar and concrete. Factor affecting strength of mortar and concrete.</p>	<p>Simple isometric Scaled drawings, Isometric views of simple objects such as cubes, square and rectangular prisms and pyramids. Code of practice for General Engineering, Drawing as published by ISI to be understood and followed. National building code.</p>	<p>Menstruation applied to area of brick works – requirements of volume and its application to simple excavations area of damp proof course. Estimate of bricks.</p>
3	<p><u>Stone Masonry and Brick Masonry</u> To raise a brick wall of half, full and one & half with English or Flemish bond to a height of 1.0m, on spread footing. To repair and finish cracks in old brickwork and stone Masonry. Pointing Knowledge required.</p>	<p>Defect in stone Masonry and their repair. Methods of laying bricks in walls. Precaution to be taken in Construction of Walls. Methods of fixing new work with old Work (tooting, racking back and block bonding) Defects in brickwork, Maintenance of brick Masonry construction. Merit and demerit of brick Masonry Work.</p>	<p>-Do-</p>	<p>Site problems involving multiplication division-common fraction addition subtraction. Application of fractions to site problems. Estimation of the bricks.</p>

<p>4-8</p>	<p>To construct Floors of various types of an area of 1.00mx1.00m. To repair a given defective floor. Maintenance of hurt tiles.</p> <p><u>R.C.C. Structure</u> To make R.C.C. or brick lintel of any span after making proper arrangement of centring.</p> <p>To repair cracks in various types of roofs to stop leakage.</p> <p>To repair the Mangalore tile roof covering. Repair of old damage structure reinforcement.</p>	<p>Method of using concrete for repair work and concrete grouting.</p> <p>Causes of defects in Brick, cement concrete, terrazzo and Mosaic, marble and stone floors and their remedial measures.</p> <p>Repair of old floors. Methods of cleaning, cutting and polishing of mosaic, terrazzo and Marble floors/granite (Materials and tools required).</p> <p>Laying, repair and Maintenance of PVC and linoleum floor / wooden flooring.</p> <p>Knowledge regarding flat tiles & maintenance of ceramic tiles</p> <p>Different types of lintel.</p> <p>Tools required to lay RCC & R.B.C. roofs.</p> <p>Method of lay on R.C.C & R.B.C. (Including knowledge for bending and binding and placement of bars).</p> <p>Repair of cracks in R.C.C. roofs Methods, tools and materials required.</p> <p>Knowledge regarding roof and lintel and Chemical treatment.</p>	<p>Free hand sketching of simple solids such as cubes, rectangular blocks, cylinders and the views of these objects when viewed perpendicular to their surface or axes.</p> <p>Free hand sketching of bricks-queen closer bats, half bats, half queen closers-king closer.</p> <p>-Do-</p>	<p>Decimal addition, subtraction, multiplication and division, conversion of decimal to common fractions and vice-versa site problems. Conversion of metric system</p> <p>Square root finding square root of perfect square whole numbers decimals.</p> <p>-Do-</p>
<p>9</p>	<p><u>Surface Finishing</u> To plaster a given brick surface of area 1mx1m To repair a defective plaster surface. Plinth</p>	<p>Tools required for Plastering. Methods of cement and lime plastering. Preparation of surface for</p>	<p>Preparation of free hand sketches in plan and elevation 4 ½ ft. wall straight and junction.</p>	<p>Metric system- metric weights and measurements units-conversion factors-problem.</p>

	<p>Protection. To do pointing on old brick masonry work.</p>	<p>plastering. Application of plaster coats. Curing of plaster. Defects in plaster work and their preparations. Repair of defective plaster. Repair of damp surface of wall / ceiling. Tools and material required for pointing. Operation involved pointing of masonry works. Repair of old pointing.</p>	<p>Preparation of free hand sketches of rattrap bond, diagonal-bond, herring bond basket bond and other ornamental panels.</p>	<p>Ratio and proportion – problems on the above such as finding out quantities of material for various mixes of mortar-concrete.</p>
10-13	<p><u>Painting</u> Painting of wood/ steel work. White washing / distempering colour washing / cement pointing. To practice/ white washing / distempering/colour Washing/ cement painting of area of 2mx2m. TO repair wooden workout door/ window/ ventilators/ other Wooden structures. To replace broken glass panes, acrylic emulsion over plaster of parish. To replace broken glazed tiles. The students should be encouraged to affect repair work in the institution building under the guidance of the teacher; quality of work should be the main objective.</p>	<p>Knowledge about painting different types of washing. i.e. water base, oil base primer applying with surface preparation before painting. Brush / Spray / roller used in painting. Texture painting. Preparation of wall surface with putty. Knowledge of timber different type of fitting, knowledge of other type of doors and windows and different types of joints.</p>	<p>Drawing of simple geometrical problems involving lines squares and polygons. Problems involving circles, tangents application to arches, mouldings.</p>	<p>Menstruation areas and perimeters of rectangles, square and triangles. Problems on perimeter and areas of polygons such as pentagon hexagon -octagon.</p>
14	<p><u>Painting of Iron and steel Works</u> Practice of painting on different steel structures and other surfaces of plasters.</p>	<p>Methods of painting new steel work. Methods of repairing and painting old iron steel work.</p>	-do-	-do-

15	<p><u>False ceiling wall panelling and wall papering.</u> False ceiling wall and wallpapering & construction and repairing.</p> <p>Mode of Measurement.</p>	<p>Tools and materials required for false ceiling wall panelling and wallpapering.</p> <p>Process for placing wallpaper method of wall panelling and false ceiling with different materials in old and new walls. Knowledge of false ceiling</p>	<p>Drawing, architectural mouldings, such as ovalocaveto, torus, Scotia cyma recta, and cyma reverse.</p>	<p>Problems on perimeter and areas of polygons such as pentagonhexagon-octagon.</p>
16 to 17	<p><u>Damp Proofing.</u> Construction of course for damp proofing.</p>	<p>Surface of dampness. Effect of dampness. Precautions to be taken to prevent dampness. Methods of damp proofing basements, ground floors, plinth and walls. Special damp proofing arrangement in bathroom W.C. and kitchen. Damp proofing for flat and pitched roofs and windowsills. Methods for laying damp proof course in existing buildings. Knowledge, reason and subsequent remedial measure. Knowledge required to different type of damp proofing material bonding agents.</p>	<p>Construction of ellipse by different methods.</p>	<p>Volume and surface-areas of simple geometrical solids as cubes and prisms.</p>
18 to 19	<p><u>Varnishing and polishing</u> Practice on varnishing and polishing coats in different methods.</p>	<p>Tool required for varnishing and polishing coats. Process of varnishing and polishing-preparation of surface, knotting and priming-Application of varnish coats. Methods of polishing on metal surfaces.</p>	--	--
20	<p><u>Glazing Work</u> Practice on cutting and fixing glasses and replacement.</p>	<p>Replacement and cleaning of glazing work. Tools required. Methods of cutting glass and fixing glass as desired. Materials required for cleaning old glass panes and method of cleaning.</p>	--	--

21	<u>Vitrified tiled work.</u> Practice on method of cleaning of china clay.	Method of cleaning of china clay glazed tiles and materials required for cleaning.	--	--
22	<u>Anti termite Treatment in Building.</u> Practice on application.	Method of Anti termite Treatment for walls. Anti termite Treatment for wood work in Building.		
23 to 24	<u>Sanitary and drainage works.</u> Cutting of pipes to required length and also thread on a given piece of pipes. Jointing G.I.pipes, plastic pipes by suitable methods. Jointing of sewerage pipes cast- iron and stoneware. Exercises involving the fitting of various pipe fittings and also involving the fitting of various sewerage fittings. Student should be attached in batches to work with a plumber who is executing work locally or in Government public health work. Installation and maintenance of Water pumps. Prepare Layout Plan (from modification point of view) of concealed and open type Water line (G.I) of a bathroom. Visit to New Construction area.	Brief idea of inspection chamber, manhole, intercepting chamber ventilating pipes, soak pit, septic tank and different type of fittings and specials. Gradient followed in house sewers, connection of house sewer with municipal service. Measurement, inspection and quality control parameters. Problem and remedies.	--	--
25	Revision			
26	Final Examination			

	e) Mallet - 1	
	f) claw hammer - 1	
	g) Hand brace with bits - 1	
	h) Plane - 1	
43.	Wheel barrow	3 nos.
44.	Tubular scaffolding 25mm dia. With coupling and fitting complete	As required
45.	Steel measuring boxes - (.06cft-3nos.&12cft- 3nos.)	6 nos.
46.	Adjustable props. Steel	24nos.
47.	Flat form – 1.5mx 1.5mx2mt.	2nos.
48.	Bending rods	2 nos.
49.	Steel shuttering- 200sq.mts.	1 no.
50.	Bench grinder	1 no.
51.	Water pipe level 10 mts.	4 nos.

Note : Tools and Equipments should not be changed